

Appl. No. 10/614461
Amdt. dated November 28, 2005
Reply to Office Action dated September 2, 2005

REMARKS**BEST AVAILABLE COPY**

Applicant thanks the Office for the attention accorded the present Application in the September 2, 2005, Office Action. In that Action, Claims 1-14 and 16-19 were rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Patent 62-278377 (JP '377), and Claim 15 was allowed.

Applicant thanks the Office for allowance of Claim 15.

35 U.S.C. §102(b) rejection

The Office has rejected Claims 1-14 and 16-19 under 35 U.S.C. §102(b) as being anticipated by Japanese Patent 62-278377 (JP '377). The Office states that JP '377 discloses an assembly and method of making a multistage magnetic fluid seal comprising a shaft having plural trapezoidal ridges, a permanent magnet, and first and second pole pieces each having plural trapezoidal-shaped ridges along an inner diameter. The ridges of the pole pieces are spatially opposed to the ridges of the shaft to form a close, non-contacting relationship. The relationship defines a radial gap that receives ferrofluid to form plural stages. Each ridge has a top plateau that diverges to an annular region at an angle between 0 to 180 degrees. Applicant respectfully traverses.

Applicant has amended Claims 1, 6, 11, and 16 to include the limitation that the top flat portion of the ridges on both the shaft and the pole piece are opposed to each other. Further, the top flat portion of the trapezoidal-shapes ridges of the shaft and the

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top flat portion of the trapezoidal-shaped ridges of the pole piece extend into a close non-contacting relationship and this relationship defines a radial gap.

Applicant's invention discloses a shaft having a plurality of ridges and an annular pole piece also having a plurality of ridges. The ridges have a trapezoidal shape where the top of each ridge has a flat, plateau shape with sides that diverge away from the top of the ridge to the bottom of the adjacent troughs. Each trapezoidal-shaped ridge of the shaft is aligned to coincide with and be opposed to and concentric with one of the trapezoidal-shaped ridges of the pole piece.

JP '377 discloses a magnetic circuit formed by a shaft, annular magnet members, and an annular permanent magnet between the annular members where a magnetic fluid is interposed between the shaft and the magnet members. The surface of the magnet members are formed with recesses having a trapezoidal shape and the shaft is formed with projections that mate with the recesses in a spatial relationship. The magnetic fluid is interposed between the recesses and the projections.

Applicant's invention is unlike JP '377 because JP '377 has the ridges of the shaft opposed to the troughs of the pole piece, i.e. the ridges of the shaft face the troughs of the pole piece such that the top flat portion of the shaft ridge is spatially within the trough. Applicant's invention has the top flat portion of the ridges of the shaft and the top flat portions of the ridges of the pole piece opposed and facing each other in a spaced relationship forming the radial gap. Applicant's ridges on the shaft are not within the troughs of the pole piece. JP '377 has the magnetic fluid disposed in the

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recesses (or grooves) of the trapezoidal-shaped ridges of the pole piece between the recesses in the pole piece and the ridges on the shaft. (See JP '377, Figures 1 and 2). Applicant, on the other hand, has the magnetic fluid disposed between the spatially-opposed flat top portions of the trapezoidal-shaped ridges of the pole piece and the shaft. (See Applicant's disclosure, Figure 2).

In light of the above amendments and arguments presented, Applicant respectfully submits that the 35 U.S.C. §102(b) rejections of Claims 1-14 and 16-19 have successfully been traversed. Allowance of these claims is therefore requested.

Applicant believes that all of the pending claims should now be in condition for allowance. Early and favorable action is respectfully requested.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

Respectfully submitted,



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